excepting *Cystopus candidus* in the oospore-bearing distortions on *Brassica nigra*. But the oospores, after once being formed (during May and June?), could, of course, endure any kind of weather. These facts would go to show that under some conditions at least *Peronospora Euphorbiae* should be classed as a drought-resisting species. It is an interesting fact that during dry or otherwise unfavorable times, the various species of Peronosporace disappear entirely from their rarer hosts and attack, to a lessened degree, only their most common hosts. For instance, here *Peronospora Euphorbiae* is found on *Euphorbia hypericifolia* only during favorable Peronospora weather, and then only in small quantity. During dry weather I have as yet failed entirely to find it on this host. These facts might indicate a closer adaptation of the Peronospora for some hosts than for others, and hence, under unfavorable conditions, only those hosts would be attacked to which the parasite was most perfectly adapted. Of course, in some cases, the habitat (on high, dry land for instance) of the supporting plant might hinder the spread of the parasite, although the parasite were perfectly adapted to its host.

32. **Peronospora sordida** Berkeley.

On *Scrophularia nodosa* L.

1993, June 2, 1890, Manhattan.

Including the additions given in this paper, there are now known from Kansas 33 species of Peronosporaceae, on 71 different host plants, entering the hybrid varieties of cultivated grape as 1 species. 70 of these host plants are dicotyledonous phanerogams, and 1 (Setaria) a monocotyledonous phanerogam. 31 species on 67 host plants occur within a radius of ten miles from Manhattan, Kansas.

ON THE GERMINATION OF INDIAN CORN AFTER IMMERSION IN HOT WATER.

BY W. A. KELLERMAN, PH. D.

Numerous trials were made in July and August to determine the germination of Indian corn after immersion for one-third of a minute to twenty minutes in water ranging in temperature from 56° C. (132.8° F.) to 88½° C. (199° F.).

The temperature of the water in the vessel was kept, during the immersion of the grain, at the desired temperature by addition of cooler or warmer water as required.

After immersion the grain was plunged into cold water in order to cool it rapidly. While in the vessel of hot or cold water, the wire basket containing the grain was given repeatedly a whirling and a plunging motion, so that every grain might surely be subjected to water of the same temperature the entire time of immersion.

After the above treatment the grain was at once planted, either in a Geneva tester kept indoors, or in the ground. The results of the germinations are given in the extended tabulation below.

The varieties of corn used were St. Charles and Normandy Giant (*white*), Leaming and Murdock's (*yellow*), Thoroughbred *Flint*, Mason's flour corn (*soft*), Shakers Early *Sweet* and *Pop* corn. The change from St. Charles to Normandy Giant, and from Leaming to Murdock's, was necessitated by insufficient quantity of the first variety in each case, but the germinative capacity was tested in each case and they were found to be identical. Therefore, the results are not vitiated by this enforced change.

The grains in the tester germinated in two or three days, but usually six or seven

days elapsed before they were counted out of the same. No grains, therefore, were included in the non-germinating lot except those that really belonged there.

The first germinations in the ground were unsatisfactory, on account of the drouth that prevailed in early summer, and were wholly abandoned. But later they were repeated, and their number can be seen by consulting the tabulation. In the second set of trials the germinations were not entirely satisfactory, due to climatic and other conditions.

In many cases the grain was soaked, previous to treatment, from a few to 22 hours, in water of the ordinary temperature at that season of the year. The experiments show, in each case, that water of the higher temperatures decreases or destroys their germinative power much more quickly than in case of grains not thus thoroughly soaked. For example: In case of immersion of five minutes in water at a temperature of 70° C. (158° F.) the germination (of the white variety in the tester) was 98 per cent.; and when previously soaked 8 hours (as well as for 22 hours) it was zero — *i. e.*, in the latter case not a single grain germinated.

The difference in favor of non-soaked corn, however, is obliterated when the comparatively low temperatures obtain — as seen in the tabulation opposite 58° C (136.4° F.), etc.

Numerous control experiments were made at the same time with grains not heated with hot water. The results of these (combined) are shown in the last eight lines of the table.

Owing to the large size of the grains it was impracticable to use more than about 50 in each trial, yet the four or six repetitions (with different varieties) for each degree C. and the wide range compassed, namely, 88½ (199° F.) down to 56° C. (132.8° F.), partially compensate for the probable variation in percentage of germination for so few grains taken.

It will be noticed that a very high degree of temperature, *e. g.*, 88½° C. (199° F.), usually kills less than half of the seeds when the immersion is prolonged to 20 seconds.

An immersion of one minute in water at 81° C. (177.8° F.) kills comparatively few grains, but if previously soaked 18 hours all are killed.

An immersion of three minutes, to be comparatively harmless, must be in water at or less than 76 or 75° C. (168.8° to 167° F.). But here, as above, it is fatal if the grain has been previously soaked for several hours.

An immersion of five minutes, to secure a result approximately similar to the last, must be in water at 73° or 72° C. (163.4° to 161.6° F.).

The immersion can be prolonged, without detriment to the (previously dry) seed, ten or fifteen minutes provided the water is at a temperature of about 59° C. (138.2° F.), or less.

Similar trials with wheat and oats, carried on in connection with work of the Experiment Station of the State Agricultural College. show that these grains endure approximately the same temperatures with similar results. Besides, immersion of the seeds of these two cereals in water at a temperature of about 57° C. (or 134° F.), proved to be *an efficient fungicide* for wheat smut and oat smut.

The general results with the varying temperature and time of immersion, as well as the generally poorer germination in the ground than in the tester, can easily be seen from the table which here follows:

TABLE OF GERMINATION.

DEGREES.		Time, in minutes.	WHERE GERMINATED.	WHITE.			YELLOW.			FLINT.			SOFT.			SWEET.			POP.			REMARKS.
C.	F.			No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	
88½	199.15	⅛ ⅛ ⅛ ⅛	In tester	49	38	77½	50	34	68	50	25	50	50	28	56	.....	.....	.....	.....	.....	.....	———
88½	"		In ground	50	19	38	50	15	30	50	16	32	50	12	24	.....	.....	.....	.....	.....	.....	———
84	183.2		In tester	50	39	78	50	44	88	38	34	89½	50	43	86	.....	.....	.....	.....	.....	.....	———
84	"		In ground	50	29	58	50	44	88	50	42	84	50	29	58	.....	.....	.....	.....	.....	.....	———
81	177.8	1	In tester	50	40	80	50	46	92	50	40	80	50	45	90	.....	.....	.....	.....	.....	.....	———
81	"	1	In ground	50	5	10	50	7	14	50	17	34	50	9	18	.....	.....	.....	.....	.....	.....	———
81	"	1	In tester	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
81	"	1	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
81	"	2	In tester	48	8	16½	50	9	18	50	10	20	50	17	38	.....	.....	.....	.....	.....	.....	———
81	"	2	In ground	50	0	0	50	1	2	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
81	"	2	In tester	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
81	"	2	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
80	176.0	3	In tester	50	1	2	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
80	"	3	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
80	"	5	In tester	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
80	"	5	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
79	174.2	3	In tester	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
79	"	3	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
79	"	5	In tester	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
79	"	5	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
78	172.4	3	In tester	50	0	0	50	9	18	50	10	20	50	0	0	.....	.....	.....	.....	.....	.....	———
78	"	3	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
78	"	5	In tester	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
78	"	5	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
77	170.6	3	In tester	50	16	32	50	18	36	50	36	72	50	18	36	.....	.....	.....	.....	.....	.....	———
77	"	3	In ground	50	0	0	50	0	0	50	8	16	50	0	0	.....	.....	.....	.....	.....	.....	———
77	"	5	In tester	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
77	"	5	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
76	168.8	3	In tester	50	33	66	50	39	78	50	42	84	50	30	60	.....	.....	.....	.....	.....	.....	———
76	"	3	In ground	50	0	0	50	2	4	50	6	12	50	1	2	.....	.....	.....	.....	.....	.....	———
76	"	5	In tester	50	9	18	50	9	18	50	30	60	50	7	14	.....	.....	.....	.....	.....	.....	———
76	"	5	In ground	50	0	0	50	0	0	50	0	0	50	0	0	.....	.....	.....	.....	.....	.....	———
75	167	3	In tester	50	36	72	50	37	74	50	46	92	50	31	62	.....	.....	.....	.....	.....	.....	———
75	"	3	In ground	50	1	2	50	9	18	50	16	32	50	0	0	.....	.....	.....	.....	.....	.....	———
75	"	5	In tester	43	28	65	33	22	66½	28	21	75	48	32	66½	.....	.....	.....	.....	.....	.....	———
75	"	5	In ground	50	0	0	50	0	0	50	1	2	50	0	0	.....	.....	.....	.....	.....	.....	———
74	165.2	3	In tester	50	42	84	50	44	88	50	45	90	50	44	88	.....	.....	.....	.....	.....	.....	———
74	"	3	In ground	50	3	6	50	17	34	50	38	76	50	1	2	.....	.....	.....	.....	.....	.....	———
74	"	5	In tester	43	28	65	33	22	66½	28	21	75	48	32	66½	.....	.....	.....	.....	.....	.....	———

74	165.2	5	In ground......	50	0	**0**	50	4	**8**	50	9	**18**	50	0	**0**	......	......	......	......	......	......	——
73	163.4	1	In tester......	50	49	**98**	50	48	**96**	50	48	**96**	50	48	**96**	50	38	**76**	50	48	**96**	——
73	"	2	In tester......	59	51	**86½**	50	46	**92**	59	54	**83**	50	50	**100**	50	32	**64**	50	49	**98**	——
73	"	3	In tester......	80	67	**83½**	100	87	**87**	99	95	**96**	102	96	**94**	50	30	**60**	50	33	**66**	——
73	"	3	In ground......	50	16	**32**	50	24	**48**	50	23	**46**	50	9	**18**	......	......	......	......	......	......	——
73	"	3	In tester......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 8 hours.
73	"	3	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 8 hours.
73	"	3	In tester......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
73	"	3	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
73	"	5	In tester......	50	38	**76**	50	39	**78**	50	41	**82**	48	21	**43½**	......	......	......	......	......	......	——
73	"	5	In ground......	50	0	**0**	50	4	**8**	50	9	**18**	50	0	**0**	......	......	......	......	......	......	——
73	"	5	In tester......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 8 hours.
73	"	5	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 8 hours.
73	"	5	In tester......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
73	"	5	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
72	161.6	1	In tester......	50	44	**88**	50	48	**96**	50	39	**78**	50	46	**92**	50	38	**76**	50	47	**94**	——
72	"	1	In ground......	50	23	**46**	50	32	**64**	......	......	......	......	......	......	......	......	......	......	......	......	——
72	"	2	In tester......	50	39	**78**	50	48	**96**	......	......	......	......	......	......	......	......	......	......	......	......	——
72	"	2	In ground......	50	23	**46**	50	23	**46**	......	......	......	......	......	......	......	......	......	......	......	......	——
71	159.8	1	In tester......	50	46	**92**	50	45	**90**	50	42	**84**	50	46	**92**	50	44	**88**	50	48	**96**	——
71	"	2	In tester......	50	45	**90**	50	49	**98**	50	47	**94**	50	43	**86**	50	33	**66**	50	41	**62**	——
71	"	2	In ground......	50	23	**46**	50	33	**66**	......	......	......	50	35	**70**	50	5	**10**	50	17	**34**	——
70	158.0	1	In tester......	50	49	**98**	50	49	**98**	50	48	**96**	50	48	**96**	50	40	**80**	50	41	**82**	——
70	"	2	In tester......	50	46	**92**	50	48	**96**	50	40	**80**	50	48	**96**	50	37	**74**	50	46	**92**	——
70	"	2	In ground......	50	16	**32**	50	35	**70**	100	64	**64**	50	33	**66**	50	20	**40**	50	35	**70**	——
70	"	3	In tester......	100	88	**88**	100	97	**97**	99	86	**87**	90	84	**93½**	50	37	**74**	50	45	**90**	——
70	"	3	In ground......	100	22	**22**	100	44	**44**	100	47	**47**	100	46	**46**	50	0	**0**	50	32	**64**	——
70	"	3	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 8 hours.
70	"	3	In tester......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
70	"	5	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
70	"	5	In tester......	50	49	**98**	50	34	**68**	50	45	**90**	50	48	**96**	49	25	**51**	49	39	**79½**	——
70	"	5	In ground......	50	38	**76**	50	39	**78**	......	......	......	50	32	**64**	......	......	......	......	......	......	——
70	"	5	In tester......	50	0	**0**	50	0	**0**	50	1	**2**	50	0	**0**	......	......	......	......	......	......	Soaked 8 hours.
70	"	5	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 8 hours.
70	"	5	In tester......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
70	"	5	In ground......	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 22 hours.
69	156.2	3	In tester......	48	39	**81½**	50	50	**100**	50	50	**100**	50	50	**100**	......	......	......	......	......	......	——
69	"	3	In ground......	50	39	**78**	50	50	**100**	50	48	**96**	25	23	**92**	......	......	......	......	......	......	——
69	"	5	In tester......	50	44	**88**	50	50	**100**	50	47	**94**	50	46	**92**	......	......	......	......	......	......	——
69	"	5	In ground......	50	28	**56**	50	37	**74**	50	38	**76**	50	16	**32**	......	......	......	......	......	......	——
68	154.4	1	In tester......	50	50	**100**	50	50	**100**	......	......	......	......	......	......	......	......	......	......	......	......	——
68	"	1	In ground......	50	45	**90**	50	36	**72**	......	......	......	......	......	......	......	......	......	......	......	......	——
68	"	2	In tester......	50	50	**100**	50	47	**94**	50	47	**94**	50	50	**100**	50	47	**94**	50	49	**98**	——
68	"	2	In ground......	50	36	**72**	50	43	**86**	50	41	**82**	50	31	**62**	50	16	**32**	50	43	**86**	——
67	151.6	1	In tester......	50	5	**10**	50	0	**0**	50	8	**16**	50	2	**4**	50	1	**2**	50	0	**0**	Soaked 10½ hours.
67	"	3	In tester......	50	0	**0**	50	0	**0**	50	1	**2**	41	0	**0**	50	0	**0**	50	0	**0**	——
66	150.8	5	In tester......	50	49	**98**	50	48	**96**	50	48	**96**	50	50	**100**	50	43	**86**	50	48	**96**	——
66.	"	5	In ground......	50	38	**76**	50	42	**84**	50	29	**58**	50	46	**92**	50	20	**40**	50	31	**62**	——
66	"	15	In tester......	50	47	**94**	51	26	**51**	50	49	**98**	50	36	**72**	50	18	**36**	50	23	**46**	——
65	149.0	3	In tester......	50	50	**100**	50	47	**94**	......	......	......	......	......	......	......	......	......	......	......	......	——
65	"	3	In ground......	50	3	**6**	50	3	**6**	......	......	......	......	......	......	......	......	......	......	......	......	——
65	"	5	In tester......	00	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	......	......	......	......	......	......	Soaked 18 hours.

TABLE OF GERMINATION—CONCLUDED.

DEGREES.		Time, in minutes.	WHERE GERMINATED.	WHITE.			YELLOW.			FLINT.			SOFT.			SWEET.			POP.			REMARKS.
C.	F.			No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	No. grains	No. germinated	Per cent. germinated	
65	149.0	5	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
65	"	10	In tester.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
65	"	10	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
64	147.2	5	In tester.....	50	50	**100**	96	92	**96**	92	87	**94½**	50	50	**100**	50	46	**92**	50	50	**100**	———
64	"	5	In ground.....	100	65	**65**	100	70	**70**	100	80	**80**	100	77	**77**	50	7	**14**	50	33	**66**	———
64	"	5	In tester.....	98	47	**48**	100	50	**50**	100	50	**50**	.....	.....	.....	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
64	"	5	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
64	"	10	In tester.....	50	50	**100**	50	50	**100**	50	50	**100**	50	46	**92**	50	43	**86**	50	47	**94**	———
64	"	10	In ground.....	100	39	**39**	100	51	**51**	100	50	**50**	100	31	**31**	50	2	**4**	50	12	**24**	———
64	"	10	In tester.	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
64	"	10	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
64	"	15	In tester.....	50	49	**98**	49	47	**96**	50	45	**90**	50	50	**100**	50	28	**56**	50	47	**94**	———
63	145.4	5	In tester.....	100	96	**96**	100	99	**99**	100	99	**99**	50	49	**98**	50	42	**84**	1	.....	.....	———
63	"	5	In ground.....	50	29	**58**	50	36	**72**	50	43	**86**	50	39	**78**	51	38	**66½**	50	41	**82**	———
63	"	5	In tester.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
63	"	5	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
63	"	10	In tester.....	50	47	**94**	100	98	**98**	50	50	**100**	98	98	**100**	.....	.....	.....	.....	.....	.....	———
63	"	10	In ground..	50	36	**72**	50	34	**68**	50	15	**30**	50	29	**58**	.....	.....	.....	.....	.....	.....	———
63	"	10	In tester.	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
63	"	10	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
62	143.6	5	In tester.....	50	47	**94**	50	49	**98**	50	50	**100**	50	49	**98**	.....	.....	.....	.....	.....	.....	———
62	"	5	In ground.....	50	35	**70**	50	43	**86**	50	34	**68**	50	42	**84**	.....	.....	.....	.....	.....	.....	———
62	"	5	In tester.	50	6	**12**	50	4	**8**	50	3	**6**	50	2	**4**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
62	"	5	In ground.....	50	5	**10**	50	4	**8**	50	0	**0**	50	4	**8**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
62	"	5	In tester.....	50	0	**0**	50	2	**4**	50	1	**2**	50	1	**2**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
62	"	5	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	1	**2**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
62	"	10	In tester.....	50	48	**96**	50	49	**98**	50	46	**92**	50	49	**98**	.....	.....	.....	.....	.....	.....	———
62	"	10	In ground.....	50	32	**64**	50	34	**68**	50	23	**46**	50	32	**64**	.....	.....	.....	.....	.....	.....	———
62	"	10	In tester.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
62	"	10	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
62	"	10	In tester.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
62	"	10	In ground.....	50	0	**0**	50	0	**0**	50	0	**0**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
61	141.6	5	In tester.....	50	48	**96**	50	50	**100**	50	48	**96**	50	49	**98**	50	47	**94**	50	50	**100**	———
61	"	5	In ground.....	50	39	**78**	50	40	**80**	50	38	**76**	50	44	**88**	50	21	**42**	50	34	**68**	———
60	140.0	3	In tester.....	50	47	**94**	50	46	**92**	50	48	**96**	50	43	**96**	50	48	**96**	50	50	**100**	———
60	"	3	In ground..	50	33	**66**	50	40	**80**	50	39	**78**	50	31	**62**	50	16	**32**	50	32	**64**	———
60	"	5	In tester.....	100	91	**91**	104	103	**99**	100	94	**94**	100	96	**96**	100	82	**82**	100	99	**99**	———
60	"	5	In ground.....	50	10	**20**	50	46	**92**	50	42	**84**	50	36	**72**	50	13	**26**	50	40	**80**	———
60	"	5	In tester.	50	16	**32**	50	15	**30**	50	14	**28**	50	5	**10**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.

60	140.0	5	In ground.....	50	22	**44**	50	26	**32**	50	13	**26**	50	24	**48**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
60	"	10	In tester.....	50	50	**100**	50	46	**98**	50	43	**86**	50	47	**94**	50	39	**78**	50	50	**100**	——— |water.
60	"	10	In tester.....	52	42	**81**	50	49	**98**	50	50	**100**	50	49	**98**	50	40	**80**	50	49	**98**	Immersed in cold
60	"	10	In tester.....	50	2	**4**	50	2	**4**	50	2	**4**	50	0	**0**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
60	"	10	In ground.....	50	9	**18**	50	9	**18**	50	1	**2**	50	3	**6**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
59	138.2	3	In tester.....	50	48	**96**	50	49	**98**	50	44	**88**	50	46	**92**	.....	.....	.....	.....	.....	.....	———
59	"	3	In ground.....	50	45	**90**	50	49	**98**	50	45	**90**	50	48	**96**	.....	.....	.....	.....	.....	.....	———
59	"	5	In tester.....	.....	.....	.....	.....	.....	.....	32	24	**75**	50	47	**94**	.....	.....	.....	.....	.....	.....	———
59	"	5	In ground.....	50	46	**92**	50	40	**80**	50	47	**94**	50	46	**92**	.....	.....	.....	.....	.....	.....	———
59	"	10	In tester.....	50	35	**70**	50	42	**84**	50	47	**94**	50	49	**98**	.....	.....	.....	.....	.....	.....	———
59	"	10	In ground.....	50	43	**86**	50	29	**58**	50	42	**84**	50	42	**84**	.....	.....	.....	.....	.....	.....	———
58	136.4	3	In tester.....	50	49	**98**	50	47	**94**	50	50	**100**	50	49	**98**	50	47	**94**	50	49	**98**	Soaked 6 hours.
58	"	3	In ground.....	57	40	**80**	50	39	**78**	50	29	**58**	50	35	**70**	50	12	**24**	50	15	**30**	Soaked 6 hours.
58	"	5	In tester.....	50	50	**100**	50	50	**100**	50	50	**100**	50	49	**98**	50	44	**88**	50	49	**98**	———
58	"	5	In ground.....	50	37	**74**	50	36	**72**	50	33	**66**	50	38	**76**	50	13	**26**	50	34	**68**	———
58	"	5	In tester.....	50	49	**8**	49	48	**98**	50	50	**100**	50	50	**100**	50	38	**76**	50	45	**90**	Soaked 6 hours.
58	"	5	In ground.....	50	18	**36**	50	27	**54**	50	32	**64**	50	31	**62**	50	7	**14**	50	42	**84**	Soaked 6 hours.
58	"	5	In tester.....	50	27	**54**	50	21	**42**	50	16	**32**	50	22	**44**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
58	"	5	In ground.....	50	40	**80**	50	33	**66**	50	42	**84**	50	23	**46**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
58	"	10	In tester.....	50	48	**96**	50	50	**100**	50	48	**96**	50	50	**100**	50	30	**60**	49	40	**82**	Soaked 6 hours.
58	"	10	In ground.....	50	24	**48**	50	43	**86**	20	11	**55**	17	17	**100**	33	1	**3**	50	15	**30**	Soaked 6 hours.
58	"	10	In tester.....	50	20	**40**	50	18	**36**	50	21	**42**	50	19	**38**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
58	"	10	In ground.....	50	42	**84**	50	24	**48**	50	30	**60**	50	29	**58**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
57	134.6	5	In tester.....	50	49	**98**	50	48	**96**	50	50	**100**	50	47	**94**	50	49	**98**	50	50	**100**	———
57	"	5	In ground.....	50	42	**84**	50	40	**80**	50	38	**76**	50	33	**66**	50	16	**32**	50	42	**84**	———
57	"	10	In tester.....	50	48	**96**	50	48	**96**	50	48	**96**	50	49	**98**	50	46	**92**	50	49	**98**	———
57	"	10	In ground.....	50	42	**84**	50	29	**58**	50	50	**100**	50	33	**66**	50	31	**62**	50	34	**68**	———
57	"	15	In tester.....	50	49	**98**	50	40	**80**	50	49	**98**	50	49	**98**	50	48	**96**	50	50	**100**	———
57	"	15	In ground.....	50	44	**88**	50	19	**38**	50	28	**56**	50	40	**80**	50	9	**18**	50	38	**76**	———
57	"	20	In tester.....	50	49	**98**	50	50	**100**	50	47	**94**	50	50	**100**	50	45	**90**	50	46	**92**	———
57	"	20	In ground.....	50	28	**56**	50	2	**4**	50	35	**70**	50	23	**46**	50	9	**18**	50	15	**30**	———
56	132.8	10	In tester.....	50	49	**98**	50	50	**100**	50	45	**94**	50	49	**98**	.....	.....	.....	.....	.....	.....	———
Untreated			In tester.....	300	290	**96**$\frac{1}{2}$	304	291	**97**$\frac{1}{2}$	299	265	**88**$\frac{1}{2}$	300	296	**98**$\frac{1}{2}$	201	170	**84**$\frac{1}{2}$	200	191	**93**	———
Untreated			In ground.....	300	220	**73**$\frac{1}{2}$	299	207	**69**	300	211	**70**	300	224	**74**$\frac{1}{2}$	200	75	**37**$\frac{1}{2}$	152	114	**75**	———
Untreated			In tester.....	50	49	**98**	50	49	**98**	50	46	**92**	50	50	**100**	.....	.....	.....	.....	.....	.....	Soaked 12 hours.
Untreated			In ground.....	50	46	**92**	50	49	**98**	50	48	**96**	50	45	**90**	.....	.....	.....	.....	.....	.....	Soaked 14 hours.
Untreated			In tester.....	50	50	**100**	50	50	**100**	50	48	**96**	50	47	**94**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
Untreated			In ground.....	50	49	**98**	50	43	**86**	50	45	**90**	50	49	**98**	.....	.....	.....	.....	.....	.....	Soaked 18 hours.
Untreated			In tester.....	50	47	**94**	50	50	**100**	50	50	**100**	50	49	**98**	.....	.....	.....	.....	.....	.....	Soaked 22 hours.
Untreated			In ground.....	50	48	**96**	50	46	**92**	50	48	**96**	50	46	**92**	.....	.....	.....	.....	.....	.....	Soaked 22 hours.